

The Precautionary Principle: Its Limits and Uses

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Introduction

The Precautionary Principle is a phrase first used in English around 1988. Basically, it states that *"if the consequences of an action are unknown, but are judged to have some potential for major or irreversible negative consequences, then it is better to avoid that action. The principle can also be applied through the concept of "preventative anticipation", or a willingness to take action in advance of scientific proof of evidence of the need for the proposed action on the grounds that further delay will prove ultimately most costly to society and nature,*

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and, in the longer term, selfish and unfair to future generations.” Although the original concept included risk prevention, cost effectiveness, ethical responsibilities towards maintaining the integrity of natural systems, and the fallibility of human understanding, the concept has evolved into a wider scope of principles, which now include:

- ❑ Preventive anticipation
- ❑ Safeguarding of ecological space
- ❑ Proportionality of response
- ❑ Duty of care
- ❑ Promoting the cause of intrinsic natural rights
- ❑ Paying for past ecological debts.

Douglas Butterworth ⁴ (1999) affirms that *“this Principle was first enunciated at the 1992 UN Conference on Environment and Development in Rio, and has been the subject of much discussion since. It states that: “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”.*

The essence of the Precautionary Principle is not really new. The concept has always been present in popular aphorisms such as 'An ounce of prevention is worth a pound of cure', 'Better safe than sorry', and 'Look before you leap'. Therefore, under the light of an economic point of view, the Precautionary Principle has been examined in terms of the effect on rational decision-making of the interaction of irreversibility and uncertainty.

Legal Interpretations

Foster, Vecchia and Repacholi (2000)⁵ state in their publication “Science and the Precautionary Principle” that *“Few policies for risk management have created as much controversy as the Precautionary Principle. Emerging in European environmental policies in the late 1970s, the principle has become enshrined in numerous international treaties and declarations. It is, by the Treaty on European Union (1992), the basis for European environmental law, and plays an increasing role in developing environmental health policies as well. Despite its seemingly widespread political support, the Precautionary Principle has engendered endless controversy, in part because critics have interpreted “precautionary” decisions as veiled forms of trade protectionism.”*

⁴ Butterworth, Douglas. “Talking Stock: Science and Fisheries Management”. Inaugural Lecture. August 1999. Publisher: University of Cape Town.

⁵ Foster, Kenneth R.; Vecchia, Paolo; and Repacholi, Michael H. “Science and the Precautionary Principle”. Science p. 979-981. May 12, 2000

Nonetheless, the greatest problem so far has been its wide and free interpretations. According to international legal experts, there are more than 14 different formulations of the principle in treaties and non-treaty declarations. The strongest version calls for “absolute” proof of certainty, while other lighter versions call for cost-benefit analysis and discretionary judgment.

Clearly care is needed in making judgments as to whether there is good reason to believe that harmful effects might occur, and regarding the extent of scientific uncertainty. 'Absence of evidence of risk' should never be confused with, or taken as, 'evidence of absence of risk'. An immediate and likely consequence of invoking the Precautionary Principle is research that seeks to reduce uncertainty. However, where appropriate and thorough research still finds no evidence of risk, this should be taken into account in the decision process.

For example, in an article written by Carolyn Raffernsperger⁶ about references to the Precautionary Principle in international treaties and agreements, she found that of 19 legal documents analyzed, 9 of them were related to oceanic issues dealing with Pollution, Overfishing, Damage to the Marine Environment, and Aquatic Species (including Marine Mammals). This paper will deal primarily with these oceanic issues, also referred to as “ocean noise”.

It is obvious that several groups are trying, within certain less discretionary framework, to define the Precautionary Principle and include it in international legislation. The problem –as expressed above- lies in how to achieve a middle ground without going to the extremes.

Another problem is the perception that the general public has of a particular issue, where consumer reactions and fears do not rely on scientific facts. This perception is often considered irrational or purely emotional, and therefore not considered in final decisions. However, many decision-makers choose to give greater importance to consumer points of view and media reporting, making politicians, experts and journalists accountable to public opinion.

Critics of the principle argue that it is impractical, since every implementation of a technology carries some risk of negative consequences and that it fails to take science properly into account, though in fact it relies more heavily on scientific evidence than other approaches to the problem. Still others claim to be applying the principle when clearly they are not. From all the confusion, you might think that it is a deep philosophical idea that is very difficult for a lay person to grasp.

Proponents counter that the principle is not a rule, but a conceptual tool used to clarify arguments, and especially an issue of where the burden of proof lies.

⁶ Carolyn Raffernsperger. “Uses of the Precautionary Principle in International Treaties and Agreements”. October 1999. http://www.biotechinfo.net/treaties_and_agreements.html

Case Study 1: Tuna, Dolphins and Bycatch

There are two alternatives to catch tuna by purse-seiner boats: setting on large mature tunas associated with dolphins in the high seas, or setting on juvenile tunas that are associated with logs near coastal areas.

The tuna-dolphin issue resulted –thanks to extreme animal-rights activism—in a major outcry to stop tuna-dolphin fishing. Canneries came up with their own “Dolphin Safe” policies and demanded that fishermen only catch tuna associated with floating objects, not dolphins. However, technology developed between 1980 and 2000 has allowed a 99.9% reduction in dolphin mortality, while still allowing the catch of large mature tuna. Nonetheless, based on the Precautionary Principle (e.g. inconclusive data, animal stress, data manipulation, etc), neither the U.S. government nor the U.S. canneries have changed their position. Oddly enough, they encourage fishermen to catch juvenile tuna, associated with floating objects, tuna that has not had time to reproduce.

According to James Joseph ⁷, former director of the IATTC, declared: *“it had long been known that the bycatches associated with log sets were high, but it had not been quantified. Between 1988 and 1989, the Inter American Tropical Tuna Commission (IATTC) conducted research on Fish Aggregating Devices (FADS), as an alternative to setting on dolphins. As part of this search for alternatives, we gathered data on the characteristics of floating objects that made them attractive to tuna. This search for alternatives resulted in the first comprehensive study of “bycatches” other than dolphins. When we quantified the magnitude and diversity of the bycatch in those sets, we extended our study to school and dolphin sets.*

Preliminary studies illustrated what the tradeoffs in bycatch would be between dolphin sets and log sets. The 1993 data showed that for every dolphin killed in dolphin sets, there would be 19,542 discarded tunas, 138 mahi mahi, 25 sharks and rays, 56 wahoo, 3 yellowtail, 7 rainbow runner, 1 billfish, and 0.07 sea turtles would be killed in log sets. Our bycatch studies are in progress, and although there is considerable annual variability, the data show that log sets have bycatches that are orders of magnitude higher than dolphin sets. There is also concern about catching the typically pre-reproductive tuna in log and school sets vs. the larger adult tuna typically associated with dolphins. If the fishery were to completely switch to “dolphin-safe” sets, we don't know what the environmental effects of such large bycatches would be and we don't know what the effect of catching mainly juveniles would have on the tuna population (due to poor correlation within the range of our observations between stock and recruitment).”

This statement, expressed in 1995, hit the proverbial nail on the head. Ten years later, after promoting the Dolphin Safe Policy and juvenile tuna catch, the decline in tuna landings in the Eastern Tropical Pacific has forced the IATTC and many

⁷ Joseph, James. “Comments on Earth Island Institute’s Statement on ETP Bycatch & Dolphin Safe fishing” (1995) Inter American Tropical Tuna Commission.

coastal nations to adopt quotas, reduce fleet size and establish tuna off-seasons. Should not we apply the Precautionary Principle to tuna and other species as well as dolphins? Apparently not, because public opinion and politicians decided that it is more important to avoid the potential mortality of one dolphin than to avoid the depletion of an important natural resource (tuna) and the decimation of thousands of tons of marine bycatch.

This policy also has social and economic ramifications: Most nations involved in tuna-fishing in the eastern tropical Pacific are Latin American countries that supply hundreds of canneries throughout the Region. These canneries provide ten of thousands of employers with work and salaries. The recession in the tuna industry has led many companies to withdraw from the business, the closing of canneries and thousands of unemployed. This promotes social unrest and large economic damage in Third World nations.

Responsibility for regulating and enforcing sustainable fishing practices falls to the regional fishing organizations, which must also collect, report, verify and exchange data on catches. On the basis of a periodic review of the status of fish stocks, they will allocate quotas for States fishing on the high seas.

The Agreement for the implementation of the provisions of the UN Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks aims to make the fishing industry more transparent. Fishers are obliged to report the size of catches and the amount of fish they discard, through their Governments to the FAO and regional fishing organizations. Deliberate under-reporting, which is thought to be widespread, will be monitored by other States, which all have the right to board and inspect vessels to ensure compliance with regional agreement.

Because data for many stocks do not exist or are unreliable, the Agreement calls for Governments to use the "Precautionary Principle" in devising conservation regimes. Regional organizations have the right to impose quotas or restrictions on fishing if they suspect that a stock is in danger of full exploitation. The Precautionary Principle obliges Governments to act conservatively if there is reason to suspect that serious damage is being done to the environment.

Only States that agree to adhere to the conservation and management measures adopted by the regional organizations will have access to the fishing grounds administered by those organizations, but boats of all States are subject to the Agreement, whether or not they are party to it. Under international law, a country which does not ratify an international agreement cannot be bound by its provisions. However, the Agreement places responsibility for regulating and enforcing sustainable fishing practices with regional organizations, which can take action against any boats that undermine the agreed conservation regime.

The problem again arises: Who is in charge of devising the conservation regimes? How much data is unreliable? Can we revoke the spirit of the Law and

declare everybody guilty until proven innocent? How much influence can have media-manipulating organizations over decision-making politicians?

The Precautionary Principle should not be interpreted as a "Stop" sign, but more like a "Proceed with Caution" sign. It is a yellow light, not a red light. However, many still choose to adopt the "stop" sign, or to indefinitely postpone a decision that has socioeconomic consequences.

Case Study 2: Pingers in the Ocean

Gill nets are the world's most common commercial fishing gear. But the mesh often unintentionally ensnares marine mammals, perhaps hundreds of thousands a year globally.

In the United States, the Marine Mammal Protection Act (MMPA) forbids fishermen from killing mammals in numbers considered unsustainable for a population. In some cases, government officials believed that the only way to meet those rules would be to shut down a fishery. But the invention of pingers has averted such extreme steps.

The pingers may be the undersea version of highway reflectors, warning marine mammals to slow down and pay attention. Scientists hope that the noise isn't loud enough to scare them, but instead warns them that an obstacle lies ahead.

The ocean is a noisy place, and the devices are programmed to broadcast the pings at a level as close to background as possible while still being loud enough for an animal to hear at least 100 meters away--in time to change course. The signals are sent at 15 to 30 decibels over ocean noise, or 132 decibels (equivalent to 192 decibels above ground, the level of a light conversation).

The pulses are dispatched every four seconds. For undersea animals, that use sound to help them "see," the pings illuminate a net like a street lamp.

Whales or dolphins apparently blunder into nets when they are swimming along, perhaps in a sleepy daze. Hearing the unusual ping, the animals might turn on their echo-locators --their sonar-- and then they can sense the net.

At San Diego's Sea World, new research on dolphins shows that the pingers may not be as benign as everyone has hoped. Although the animals in the experiments are not harmed, they do seem to be disturbed by the noise. When nets with pingers are put in Sea World's small tanks, dolphins do not merely avoid them, they hurriedly swim away.

In the vast ocean, however, instead of a small tank, the disturbance to cetaceans may be minor because there is plenty of room to escape the sound. Despite the questions that remain, many cetacean experts endorse pingers because they clearly save animals' lives. Experts say, though, that "they need to be deployed very judiciously" so that dolphins, porpoises and whales do not encounter them often. The trick word in this case -"judiciously"- is as vague as the Precautionary Principle.

Effects on socio-economic development, culture and traditions

Policymakers must often make decisions on issues about which there is no clear knowledge or where scientists disagree. In some instances, the Precautionary Principle can be applied. The Precautionary Principle implies the commitment of resources now, to safeguard against the potentially adverse outcome of a decision. However, it is not always clear how this principle should be related to the uncertainty associated with those outcomes. In general, the Precautionary Principle has been invoked for those decisions in which the probability distribution of future outcomes cannot be conclusively determined. Indeed all that may be known is the possibility of a potential catastrophic outcome, but with no information on its nature, timing or incidence.

While scientific knowledge keeps improving, thereby enhancing environmental assessment, it is possible to make numerous wise environmental management decisions by identifying linkages among the factors that contribute to environmental change, and by introducing corrective actions. The relationships between industrial activities and conservation of endangered species illustrate the importance of information on environmental linkages.

Society has identified valid reasons of "why" the environment must be protected and conserved. The concept of sustainable development can answer "what" needs to be done to protect the environment. Environmental management represents a set of practical tools that attempt to answer "how" this will be done. Finally, the "why", "what", and "how" can be integrated only within a socio-economic context in which national priorities (such as poverty alleviation, public participation, job creation and others) can be pursued through environmental strategies.

Eugene Lapointe,⁸ former Secretary General of CITES, states in his book "Embracing the Earth's Wild Resources" that human society is characterized by a triangle that interconnects three active elements whose relationship affects our long-term quality of life:

- Quality of the Environment

⁸ Lapointe, Eugene. "Embracing the Earth's Wild Resources. A Global Conservation Vision". 2003. Editions du Scribe. IWMC. Pag 53-54

- ❑ Access to Economic Development
- ❑ Respect of Culture and Traditions

According to Lapointe *“these elements constitute three interacting corners of a triangle and must be integrated into any decision affecting the present and future lives of people. The unrestrained preeminence of any of these components will subjugate the others and lower overall quality of life. Full-scale economic development will destroy the environment and lead to disappearance of culture and traditions; total protection of the environment will destroy culture and traditions and prevent economic development; and unabridged respect of culture and traditions will negatively impact both economic development and the environment. Quality of life will be optimized only if each corner of the triangle ‘gives something’ to the other two.”* He is obviously referring to a harmonic balance of the triangle. Examples that ratify Lapointe’s point of view abound in his book and around the world.

Risks exist on all sides of social situations, and precautionary steps create dangers of their own. Diverse cultures focus on very different risks, often because social influences and peer pressures accentuate some fears and reduce others.

Another example of extreme application of the Precautionary Principle is the so-called “acoustic disturbance” which could lead to the denial of legitimate development and be counter-productive for global management of marine species. Under the premise of the Precautionary Principle and “acoustic disturbances” a large number of marine sanctuaries have been created for the protection of cetaceans.

In the final decades of the last century, an increasing number of male sperm whales (*Physeter macrocephalus*) stranded around the North Sea, led to an increase in public interest. Intensive sound disturbances are supposed to be the main causes to explain the disorientation of the animals. Again, the key word is “supposed”. There is a probability that “acoustic disturbances” may be the cause for disorientation, but other reasons also point to pollution, fungus, solar activity, or changes in the Earth’s magnetic field. Nonetheless, in lack of better evidence, large oceanic areas have been declared sanctuaries, keeping away people and economic development.

The extent that a society lives by the Precautionary Principle can best be measured by the extent to which precautionary actions turn out to have been unnecessary. Under this statement, the Precautionary Principle has become a tool to:

- ❑ Hide behind the need to understand science
- ❑ Simplistic shortcut to regulatory action
- ❑ Policy high ground (feel good approach)
- ❑ Avoidance of trade-off decisions

On the other hand, the IUCN's website (www.iucn.org) recommends: *“Reliance on the precautionary principle has sparked major controversy, raising issues around equity, “green protectionism”, conflicts between environment and development priorities, the use of science, and the role of stakeholders in decision-making around risk. The meaning and application of precaution has been highly contested. For instance, strong sentiments have surrounded negotiations around the precautionary principle at the Convention on Biological Diversity (CBD), and the principle has been at the core of a series of disputes in the World Trade Organisation (WTO) arena. Controversy has been sparked by the perceived ambiguity or impracticality of the precautionary principle, the potential for its operation to conflict with trade, economic or development priorities, cost implications of its adoption, the wide discretionary leeway it allows decision makers, and the potential for this leeway to allow imposition of particular environmental values or disguise trade-protectionist abuse. There has been wide distrust of the principle, lack of clear or shared understanding of its meaning or relevance, little analysis of its on-the-ground impacts, and scant guidance available for its application. Furthermore, while a range of concerns has been articulated by developing countries, the active policy debate over precaution has been largely dominated by corporate and environmental voices from developed countries”*.

It is obvious that a tug-of-war is going on from both ends of the controversy, instead of trying to reach a reasonable middle ground that most people would like to accomplish.

The dilemma about the interpretation of the Precautionary Principle is also involving food safety and ecolabeling. David Groth III ⁹ expressed his point of view in a paper titled “Science, Precaution and Food Safety: How can we do better”:

“An international debate is under way, in various committees of the Codex Alimentarius Commission, on the use of precaution in making food safety decisions. The debate about precaution is part of an important larger discussion of what Codex calls “Risk Analysis,” the principles and concepts that define its approach to decision-making. Codex has been working for a decade to spell out these principles, to standardize its decision-making as much as possible and to make the basis for decisions more transparent.¹ Within the Risk Analysis framework, there is a sub-discussion on “the role of science and other legitimate factors” in decisions. The basic principles on which Codex operates recognize that both science and “other factors relevant to the protection of consumers’ health and the promotion of fair trade in foods” are a legitimate basis for safety decisions. But to date neither “science” nor “other factors” have been precisely

⁹ Groth III, Edward. “Science, Precaution and Food Safety: How can we do better”. February 2000. Consumers Union of U.S., Inc. Yonkers, New York

defined. Efforts to do so are ongoing at the Codex Committee on General Principles (CCGP), and several Codex committees that set food safety standards are working with CCGP to define how science and other factors are applied in their own work. Within that broad discussion, the role of precaution as a legitimate basis for food safety decisions has now begun to be debated. So far, this debate has been relatively shallow. Some governments have asserted that the so-called "Precautionary Principle," developed for environmental policymaking, can and should be applied in making some food safety decisions. Other governments (notably the U.S.) have argued that the "Precautionary Principle" is vaguely defined, that "precaution" can be misused as a disguised barrier to trade, that food safety decisions based on Risk Analysis are inherently precautionary in nature, and that no additional, separate precautionary "principle" is needed."

Under the argument of the Precautionary Principle, the World Trade Organization is receiving hundreds of complaints from governments around the world having to deal with barriers to trade under any "precautionary" policy. Far from being detrimental to the environment, a liberal market economy, particularly over time, serves our societal goal of environmental protection. Private property encourages good stewardship and accountability, and making more "commons" is not necessarily advantageous to cause of environmental protection by any means. Many laws have been enacted to preserve scenic natural beauty and prevent pollution, but such regulations often have unintended consequences. Free market exchange is conducive to a prosperous society. The consequences of strict environmental protection or "protection at any cost" measures are more than obvious. There are quite a few ridiculous cases where overbearing regulators trample property rights and extort exorbitant sums of money from property owners-in the name of environmental protection. With innovative public policy solutions, however, society can set and attain reasonable environmental protection goals while not biting the hand that feeds it.

Environmental scholar Indur Goklany¹⁰ disagrees with both the UN and the EU visions. In his book "The Precautionary Principle: A Critical Appraisal of Environmental Risk Assessment", he makes a powerful case that many environmentalists have misapplied the plain language of the precautionary principle, a concept he argues was intended originally to be a general notion recommending that policymakers choose rules to produce net reductions in environmental and public-health risks. Instead, environmentalists have turned the precautionary principle into a regulatory nightmare, transforming precaution into something quite different.

Goklany contends that the attraction the precautionary principle holds for many in the general public is that its plain language indicates only a "look before you leap" sensibility that strikes people intuitively as reasonable. Read properly, the

¹⁰ Goklany, Indur. "The Precautionary Principle: A Critical Appraisal of Environmental Risk Assessment" The Cato Institute. 2001

precautionary principle compels regulators to look, but then to let people leap when the evidence indicates that a technology will yield net benefits. In Goklany's interpretation, the precautionary principle insists that both the risks of adopting a new technology and the risks of technological stagnation be examined in regulatory decision making. According to him, genuine precaution is impossible without conducting some sort of risk-risk assessment. By pushing this view, he rejects many European environmentalists' claim that risk analysis is ineffective as a barometer of the environmental costs of economic activities.

CONCLUSIONS

The authors conclude that, in its current form, the Precautionary Principle's definition is not sufficient for implementation as an international piece of legislation. Instead, we foresee a clearer interpretation through three steps suggested by Cass R. Sunstein ¹¹:

1. A well-defined narrow science-based anti-Catastrophe Principle (designed to prevent the most serious risks)
2. Close attention to Costs and Benefits
3. And an approach called "Libertarian Paternalism", designed to respect freedom of choice while also moving people in directions that will improve their lives.

¹¹ Sunstein, Cass R. "Laws of Fear: Beyond the Precautionary Principle". Cambridge University Press. 2005